



SHAWNEE NATIONAL FOREST

FIRE MANAGEMENT PLAN



Reviewed and Updated by: /s/Chris A. Peterson Date :January 4, 2011



Interagency Federal fire policy requires that every area with burnable vegetation must have a Fire Management Plan (FMP). This FMP provides information about the fire management planning process for the Shawnee National Forest and compiles guidance from existing sources such as but not limited to, the Shawnee National Forest Land and Resource Management Plan (LRMP), national policy, and national and regional directives.

The potential consequences to firefighter and public safety and welfare, natural and cultural resources, and values to be protected help determine the appropriate management response (AMR) during a fire. Firefighter and public safety are the first consideration and are always the priority during every AMR. The following chapters discuss broad forest and specific Fire Management Unit (FMU) characteristics and guidance.

Chapter 1 introduces the area covered by the FMP, includes a map of the Shawnee National Forest, addresses the agencies involved, and states why the forest is developing the FMP.

Chapter 2 establishes the link between higher-level planning documents, legislation, and policies and the actions described in FMP.

Chapter 3 articulates specific goals, objectives, standards, guidelines, and/or desired future condition(s), as established in the forest's LRMP, which apply to all the forest's FMUs and those that are unique to the forest's individual FMUs.

Chapter 1. INTRODUCTION

The Shawnee National Forest developed this FMP as a decision support tool to help fire personnel and decision makers determine the AMR to an unplanned ignition. FMPs do not make decisions. Instead, they provide information, organized by FMUs, which provides a finer scale summarization of information than is possible at the forest level. These descriptions bring specific detail about the identifiable areas on the ground. FMPs are not static documents. They will evolve and be revised as conditions change on the ground and as modifications are made to the unit's LRMP.

The purpose of this plan is to define the implementation of the Fire Management Program on the Shawnee National Forest. This plan is developed in compliance with direction found in the Forest Service Manual, sections 5101, 5103, 5106, and 5108. This Fire Management Plan is also consistent with the *Wildland and Prescribed Fire Management Policy and Implementation Procedures Reference Guide*; *Managing Impacts of Wildfires on Communities and the Environment*, and *Protecting People and Sustaining Resources in Fire Adapted Ecosystems – A Cohesive Strategy*; the interagency fire management plan template; and *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-year Comprehensive Strategy Implementation Plan*.

The Shawnee National Forest's annual Fire Management Plan (FMP) is prepared and approved each year to:

1. Formally document the forest's fire program elements, objectives, strategies and resource considerations based on the Forest's Land and Resource Management Plan of 2006.
2. Provide fire managers with specific guidance to safely implement fire related direction for conducting wildland fire suppression and prescribed fire activities.
3. Interpret strategic land and resource management plan direction into specific fire management direction for each fire management unit delineated in the fire management plan.
4. Set out a specific detailed fire program that most efficiently meets fire management direction including, organization, facilities, equipment, staffing needs and related costs.

This Fire Management Plan is consistent with and guided by the Shawnee National Forest Land and Resource Management Plan (LRMP) 2006. The LRMP was developed through collaboration with interest groups, other agencies and the public. Consistent with the National Fire Plan, implementation of the FMP will provide opportunities to collaborate with local fire management agencies, including U. S. Fish and Wildlife Service - Crab Orchard National Wildlife Refuge and Cypress Creek National Wildlife Refuge; Illinois Department of Natural Resources, and Municipal Fire Protection Organizations. In addition, collaborative opportunities exist with private property owners within the Shawnee National Forest proclamation boundary.

Acronyms Used in the Fire Management Plan

FMU – Fire Management Unit	MMA – Maximum Manageable Area
FMZ – Fire Management Zone	NAAQS – National Ambient Air Quality Standard
FSH – Forest Service Handbook	T&E – Threatened & Endangered Species
FSM – Forest Service Manual	WFDSS – Wildland Fire Decision Support System
LRMP – Forest Land and Resource Management Plan	

Summary of Management Area Direction

MA	DESCRIPTION	Acres	Suppression Tactic	Wildfire Use	Prescribed Fire	Other Treatments Allowed*
CR	Candidate Wild/Scenic Rivers	14,600	All	Yes	Yes	Yes
CV	Cave Valley	2,000	All	Yes	Yes	Yes
DR	Developed Recreation Area	1,600	All	Yes	Yes	Yes
EH	Even Aged Hardwood Forest	137,700	All	Yes	Yes	Yes
HR	Heritage Resource Significant Site	3,300	All	Yes	Yes	Yes
LO	Large Openland	3,700	All	Yes	Yes	Yes
MH	Mature Hardwood Forest	24,900	All	Yes	Yes	Yes
MM	Minimal Management Area	7,900	All	Yes	Yes	Yes
MO	Mississippi/Ohio River FloodPlain	8,700	All	Yes	Yes	Yes
NA	Natural Area	15,400	All	Yes	Yes	Yes
NM	Non-Motorized Rec. Area	6,900	All	Yes	Yes	Yes
OB	Oakwood Bottoms Res.	4,700	All	Yes	Yes	Yes
RA	Research Area	7,700	All	Yes	Yes	Yes
WD	Wilderness	28,100	All	Yes	*****See Below	Yes
WW	Water-Supply Watershed	17,400	All	Yes	Yes	Yes

*** Management ignited prescribed fire may be utilized for other purposes, such as management of native and fire-dependent plant communities, with appropriate level of approval.

Chapter 2. POLICY, LAND MANAGEMENT PLANNING, AND PARTNERSHIPS

The Shawnee National Forest Land and Resource Management Plan (2006) is the guiding policy document for fire management on the Shawnee National Forest. Additional guidance is found in the Shawnee National Forest, 1997 NFMAS Analysis.

Ensuring the safety of fire management personnel and the public is the primary objective of all fire management planning and operations. A fire management plan shall be maintained that provides direction for wildfire prevention, detection and suppression, fire use, and hazardous fuels reduction. The plan shall be updated annually.

Response to any wildland fire- any non-structure-related fire in the wildland- is based on the ecological, social, and legal consequences of the fire. The appropriate response is dictated by the circumstances under which a fire occurs and the likely consequences on firefighter and public safety and welfare, natural and cultural resources, and any other values to be protected. Fire is an essential natural process that should be incorporated into all levels of planning and activities at the landscape scale and across national forest boundaries. As nearly as possible, wildland fire should be allowed to play its role in the creation and maintenance of disturbance-dependent ecosystems. Accordingly, fire should be used as a management tool, including planned ignitions and wildland fire use.

WILDFIRE

Wildfires-unwanted wildland fires-should be suppressed as necessary utilizing the full range of suppression strategies applicable and appropriate to the management area and the conditions in which the fire is burning, to protect lives and property, national forest lands, and other ownerships.

Agreements for fire detection and suppression on National Forest System lands by cooperating firefighting agencies must define suppression action commensurate with established resource management prescriptions and fire suppression action plans.

PRESCRIBED FIRE

Prescribed fire and wildland-fire use may be employed to accomplish oak and other species regeneration, hazardous fuels reduction, wildlife habitat management, ecological restoration, maintenance of fire dependent plant communities, timber-stand improvement and other management objectives. Preference should be given to landscape –scale burns. When possible, natural or existing features, such as streams, roads, and trails, should be used as firebreaks.

All management ignited prescribed fires shall be carried out in accordance with the provisions of an approved burn plan. Smoke management planning must be used to control the effects of smoke emissions and meet air quality standards. During prescribed fires, consideration shall be given to smoke sensitive areas down wind of the burn, including Indiana bat and gray bat hibernacula.

All wildland fire use shall be managed in accordance with provisions of the wildland fire decision support system (WFDSS). Smoke management will be incorporated into the Wildland Fire Decision Support System (WFDSS) in order to minimize adverse effects on smoke downwind areas, including Indiana bat and gray bat hibernacula.

Burns within 0.25 mile of any Indiana bat or gray bat hibernacula shall be conducted under conditions that reduce or eliminate the dispersal of smoke into the hibernacula.

For the protection of the Indiana bat or gray bat maternity roosts and foraging habitats, no prescribed burns shall be conducted in upland forests between May 1 and September 1 and in bottomland forests between April 1 and September 1. No burning shall be conducted in forested areas of Oakwood Bottoms between March 1 and April 1. No more than 30% of the Forest Service owned Big Muddy River bottomlands (floodplain), which begins near FS Road 387 and continues south to the Highway 3 intersection, east of the Big Muddy River levee shall be burned (blackened) in each year.

For the protection of Indiana bat male roosting-habitat within 4 kilometers(~2.5 miles) around any known hibernacula, no more than 20% of the habitat in this zone shall be burned (blackened) in each year, and within 4-8kilometers (~2.5 to 5 miles) around any known hibernacula, no more than 50% shall be burned (blackened) in each year.

For the protection of the nests and nestlings of migratory birds, growing season burns should be done as early or as late in the season as possible, preferably before April 15 and after August 1.

HAZARDOUS FUELS

Natural and activity fuels are managed for wildland –urban interface-community and resource protection, and other resource objectives. Agreements with cooperating agencies for fuels management activities are encouraged. Fuels management activities may include a range of available treatment methods, including prescribed burning, hand and mechanical treatments, and others in accordance with management prescriptions.

The regulations and policy in the following documents guide the fire management as outlined in this FMP.

2.1. National and Regional Fire Management Policy

Forest Service policy and direction that are relevant to this plan include:

- ✓ Wildland and Prescribed Fire Management Policy, Implementation Procedures and Reference Guide, August 1998.
- ✓ Federal Review and Update of the 1995 Federal Wildland Fire Management Policy and Program Review, January 2001.
- ✓ Protecting People and Sustaining Resources in Fire-Adapted Ecosystems: A Cohesive Strategy, October 2000.
- ✓ A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment, 10-Year Comprehensive Strategy, August 2001.
- ✓ Land and Resource Management Plan, 2006 Shawnee National Forest.
- ✓ Forest Service Manual (FSM) 5100.
- ✓ Forest Service Handbook (FSH) 5109.
- ✓ Interagency Standards for Fire and Fire Aviation Operations 2009.
- ✓ Fireline Handbook, March 2004.
- ✓ Shawnee National Forest, 1997 NFMAS Analysis.

2.2. Shawnee National Forest Land and Resource Management Plan

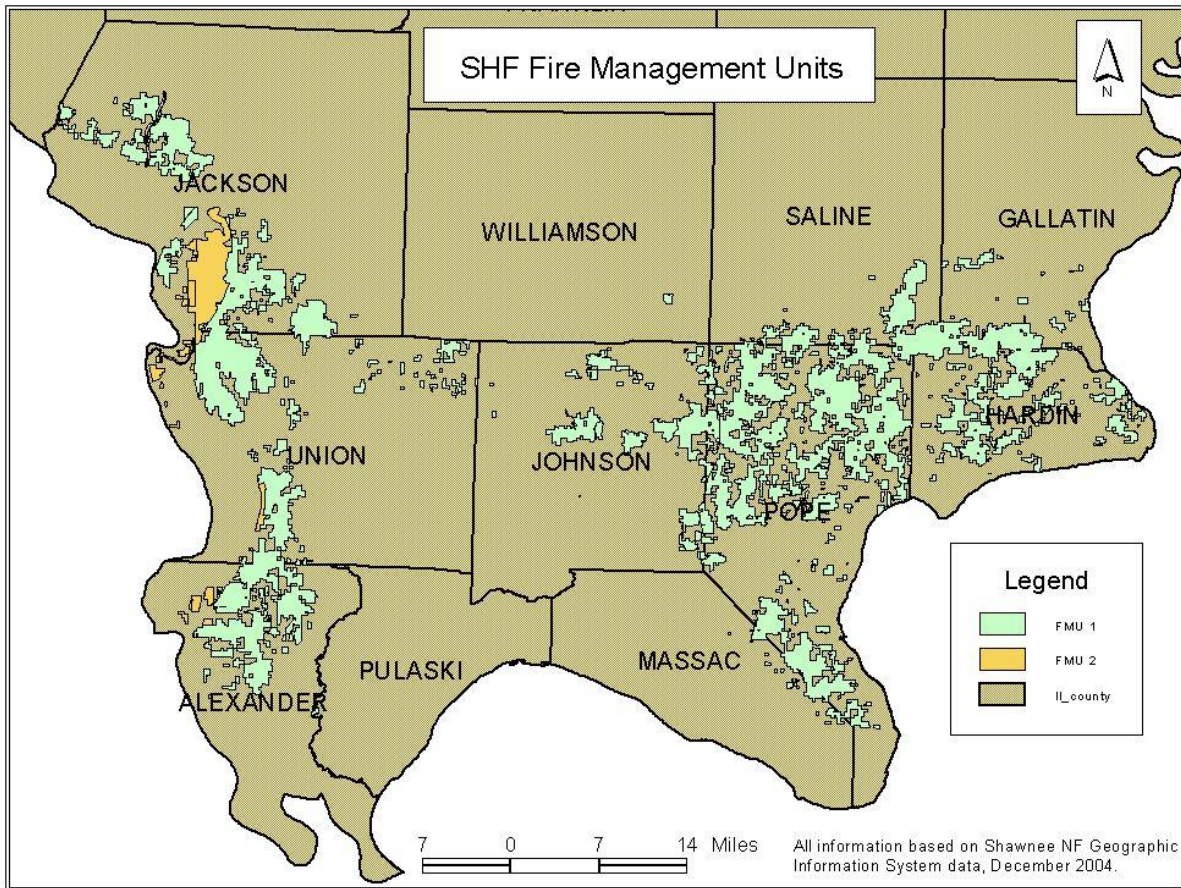
The Fire Management Plan supports the goals and objectives identified in the Shawnee National Forest LRMP. The FMP does not make decisions. Rather it provides the operational and administrative parameters for fire managers to implement the LRMP. The LRMP meets National Environmental Policy Act (NEPA - FSH 1909.15) requirements as well as other State and Federal regulatory requirements.

2.3. Partnership

Agreements with cooperating fire-fighting agencies for fire detection and suppression on national forest lands must define suppression action in accordance with established resource management objectives and fire plans. All contracts for work must contain clauses or direction that provides adequate fire prevention measures on or near the work site.

Chapter 3. FIRE MANAGEMENT UNIT DESCRIPTIONS

The primary purpose of developing FMUs in fire management planning is to assist in organizing information in complex landscapes. FMUs divide the landscape into smaller geographic areas to easily describe safety considerations, physical, biological, social characteristics and to frame associated planning guidance based on these characteristics.



Vegetation communities, topography, and relative risk are used to define Fire Management Units (FMUs) on the Forest. Since fire is part of the natural disturbance regime for all vegetation communities of the Forest, indirect or non-aggressive suppression methods are potentially applicable in all areas. Actual tactics are left to the discretion of the initial attack incident commander, but some areas lend themselves to certain tactics more readily than others. FMUs are therefore delineated by preferred suppression response, which is often dictated by fuel profile, public and firefighter safety, and risk of adverse impacts on natural resources.

Two FMUs are being considered on the Shawnee National Forest.

- FMU 1 – General Forest
- FMU 2 – Mississippi and Big Muddy River Bottomlands

There are areas within each FMU that have vegetation and topographic characteristics of the other FMU. Since these areas are generally small in size and non-contiguous they were not delineated into a separate FMU.

The following information, including the summaries of fuels conditions, weather and burning patterns, and other conditions in specific FMUs, helps determine the AMR to an unplanned ignition and provides a quick reference to the strategic goals in the forest's LRMP.

3.1. Fire Management Considerations Applicable to All Forest Fire Management Units

The following management considerations are consistent with the 2009 Federal Wildland Fire Management Policy and the Shawnee National Forest Land and Resource Management Plan (2006).

Safety

Firefighter and public safety is the first priority. All fire management plans and activities must reflect this commitment.

Fire Management and Ecosystem Sustainability

As nearly as is possible and practical the full range of fire management activities will be used to help achieve ecosystem sustainability, including its interrelated ecological, economic, and social components. The Shawnee National Forest Land and Resource Management Plan (LMP), 2006, directs the Forest Service to emphasize holistic management; that is to provide for the sustainability and health of entire landscapes and ecosystems, including all of their interrelated parts, for now and for generations to come.

Response to Wildland Fire

Fire as a critical natural process will be integrated into land and resource management plans and activities on a landscape scale, and across administrative boundaries. Responses to wildland fire are based on many factors, including ecological, social, and legal consequences of the fire. The likely consequences to firefighter and public safety, natural and cultural resources, and other values, coupled with the circumstances (e.g. cause, location, predicted weather and fire behavior, available personnel, local/national situation, political concerns, etc) under which a fire occurs dictate the appropriate management response to the fire.

Use of Wildland Fire

Wildland fire will be used to protect, maintain, and enhance resources and, as nearly as possible, be allowed to function in its former ecological role. Use of fire will be based on approved plans and will be coordinated with other resource specialists. Decisions, strategies, and tactics for using fires will be documented in a Wildland Fire Decision Support System (WFDSS) as outlined in Section III, Part C.

Rehabilitation and Restoration

Rehabilitation and restoration efforts will be undertaken as needed to protect and sustain ecosystems, public health, and safety, and to help communities protect infrastructure.

Protection Priorities

The protection of human life is the single, overriding priority. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources will be based on the values to be protected, human health and safety, and the costs of protection. Once people have been committed to an incident, these human resources become the highest value to be protected.

Wildland Urban/Rural Interface

The operational roles of federal agencies as partners in the Wildland Urban/Rural Interface are wildland firefighting, hazardous fuels reduction, cooperative prevention and education, and technical assistance. Structural fire suppression, vehicle fire suppression, emergency medical services, hazardous materials response, search and rescue events, and other all-risk incidents are the responsibility of local governments. The Forest Service may assist with exterior structural protection

activities only to the extent allowed in the FSM 5137. The Forest Service can provide support or assistance to such above incidents through a host of interagency agreements and plans.

Planning

The Shawnee National Forest uses several levels of planning to address the range and scope of programs and activities that may occur on the Forest. National and regional level planning can affect the Shawnee National Forest, but is not specific to the Forest. As provided for in the National Forest Management Act (NFMA, 1976), each national forest must have an overarching management plan to guide its planned and unplanned activities and policies. This plan must be consistent with higher level policies, but in itself serves as programmatic direction for the Forest. Individual projects must be consistent with the LMP and are subject to the analysis and disclosure requirements of the National Environmental Policy Act. The Fire Management Plan is a mid-level strategic plan that defines a program to manage wildland and prescribed fires based on the LMP.

Science

Fire management plans and programs will be based on a foundation of sound science. Efforts should be made to support research to increase scientific knowledge of biological, physical, and sociological factors affecting land and resource management. The proximity of several universities and a history of technology transfer and other cooperation should continue to aid the SHF in incorporating the best available science into management policies and activities.

Preparedness

The SHF will insure its capability to provide safe, cost-effective fire management programs in support of land and resource management plans through appropriate planning, staffing, training, equipment, and management oversight. The following Shawnee NF fire vehicles are equipped with red lights and sirens: 3204, 3206, 3208, 322, 3292, 3293, 3256, 3198, 0233, and 3198. All vehicles and operators meet 5120/5130 manual direction.

Suppression

Fires are suppressed at minimum cost considering firefighter and public safety, benefits, and values to be protected, consistent with resource objectives.

Prevention

The SHF will work with its partners (e.g. the Illinois Department of Natural Resources, Crab Orchard National Wildlife Refuge, Kinkaid Conservancy, etc.) and other affected groups and individuals to prevent unauthorized ignition of wildfires.

Standardization

The SHF will use planning processes, funding mechanisms, training and qualification requirements, operational procedures, value-to-be-protected methodologies, and public education programs that are compatible with other Federal and State agencies for all fire management activities.

Interagency Cooperation and Coordination

To the extent possible and practical, fire management planning, preparedness, prevention, suppression, fire use, restoration and rehabilitation, monitoring, research, education, and collaborative efforts will be conducted on an interagency basis with the involvement of cooperators and partners.

Communication and Education

Public support is critical for any public land management. The SHF will enhance knowledge and understanding of wildland fire management policies and practices through internal and external

communication and education programs. These programs will be continuously improved through timely and effective exchange of information among all affected agencies and organizations.

Agency Administrators and Employee Roles

Agency administrators will insure that their employees are trained, certified and made available to participate in the wildland fire program locally, regionally, and nationally as the situation demands. Employees with operational, administrative, or other skills will support the wildland fire program as necessary. Agency administrators are responsible and will be held accountable for employee participation and availability.

The scope of fire management options that can be implemented on the Shawnee National Forest are displayed below and further developed in this Fire Management Plan.

Wildland Fire Suppression

Due to the proximity of private land to Forest Service system lands, and the intermingled nature of the ownership patterns, suppression action will be taken on all fires as outlined further in this plan. The suppression response can vary with the management area direction, resources at risk, fire situation, and safety to firefighters and the public. Suppression action will be taken on all escaped prescribed fires.

Unplanned Wildland Fire

Unplanned wildland fire may be employed to accomplish oak and other species regeneration, hazardous fuels reduction, wildlife habitat management, ecological restoration, maintenance of fire dependent plant communities, timber stand improvement and other management objectives.

Prescribed Fire

Prescribed fire will be used to establish and maintain fuel profiles that contribute to cost-efficient fire protection and sustainability of ecosystem components. It is used to treat both naturally occurring fuels and those created by management activities, and to restore fire in those ecosystems where it had formerly been a naturally and historically occurring process.

Non-Fire Applications

Non-fire applications such as thinning, mechanical mastication and rearrangement can be used on the SHF as a fire management option in some management areas. Such treatments can be designed to remove or rearrange fuels to mitigate the consequences of wildfire and to permit efficient and safe management responses to wildland fire ignitions. These treatments are especially useful in areas where prescribed fire is less feasible, such as in the urban-wildland interface) or in smoke-sensitive areas. Non-fire treatments can also be used to prepare areas for future fire applications by removing excessive ladder and surface fuels. Mechanical treatments are effective in disrupting horizontal and vertical continuity of fuels, removing larger size-class fuels, and selectively treating large areas with a defined prescription.

The following Management Goals are consistent to implement and address the issues contained in the 10-Year Comprehensive Strategy, National Fire Plan, Cohesive Strategy, and Forest Service Strategic Plan, as well as the 2009 Federal Wildland Fire Management Policy.

- Achieve a program where firefighter and public safety are the highest priority in every fire management activity.
- Implement management practices including prescribed fire that will move all affected landscapes toward desired vegetation composition and structure, consistent with management area objectives and Standards and Guidelines found in the Shawnee National Forest Land and Resource Management Plan (2006).
- Maintain an efficient and effective organization for the prevention and suppression of wildfires at a minimum cost consistent with the values at risk.

3.1.1. Shawnee National Forest Land and Resource Management Plan Guidance

- **Desired Conditions:** Through implementation of the Plan, the Forest will provide the public a variety of resource uses, recreational experiences, while protecting physical and biological resources. The forest will remain biologically diverse, serving as a touchstone for the large-scale ecosystem-conservation practices of an inter-connected network of wildlands throughout the Midwest. It will offer a diversity of forest, openland and aquatic habitats that support sustainable populations of native plants and animals, particularly endangered, threatened and sensitive species (Page 5).

Objectives: The forest will be a consolidation of large unfragmented blocks of healthy, native, hardwood-forest ecosystems presenting the visitor with a mosaic of hills and streams, bordered by stands of hardwoods. Open-lands will provide scenic vistas, wildlife habitat and recreational opportunities. The amount of hardwood forest will increase as existing pine stands are re-forested to native hardwoods. The amount of oak-hickory forest type likely will decline due to the lack of disturbance on those parts of the forest where vegetation is not actively managed. It will be replaced in these areas by the more shade tolerant maple-beech forest, especially on deeper soils and more productive sites.

Goals: The oak hickory forest will be maintained in areas where there is active management to sustain it, and on the shallow soils and poorer sites. Vegetation management activities, including landscape-scale prescribed burning and timber harvesting, will be supportive of wildlife habitats and recreation and scenery management objectives. Much of the forest will be managed to provide larger and older trees for wildlife habitat and visual quality (Page 5).

Standards and Guidelines: Pages 31-91 for all management areas.

3.1.2. Physical Characteristics that Apply to All Fire Management Units

The forest is valued for its natural beauty and unique character. While most of the vast landscape to the north is gently rolling to level cropland, the forest offers a setting of hills, rock formations, and outstanding bluffs and streams, as well as a broad diversity of plants and animals. About 286,000 acres of national forest land lies within the forest boundary, the largest, publicly owned forested area and only national forest in Illinois.

3.2. Fire Management Considerations for Specific Fire Management Units

3.2.1. FMU Snap Shot

- FMU Number: FMU 1 – General Forest (all areas except those in FMU 2)
- Radio Frequency: RX-168.675 and TX 170.500
- General Risk Category: Moderate

- Fire Behavior Indicator: Moderate
- NFDRS Weather Station: Bean Ridge -119701 and Dixon Springs-119501
- Nearest Weather Station: Paducah Kentucky
- Acres/Agency: 265,475 acres of Shawnee National Forest land
- Predominant Vegetation Types: The Shawnee National Forest contains mostly oak-hickory dominated forests, with significant tracts of non-native pine and some open lands.
- Unit: Covers all of the Hidden Springs Ranger District and large portions of the Mississippi Bluffs Ranger District
- IA assets assigned to this FMU: 3-Type 6 4x4 wildland fire engines, 15 firefighters and 1-Type 3 Tractor Plow unit
- Duty Officer: Chris Peterson
- IA Dispatch Office: Illinois Interagency Dispatch Center
- Communities adjacent or within FMU: There is private property adjacent to and interspersed all throughout the FMU.
- LMP Options available for AMR: Unplanned wildland fire can be managed to achieve LMP goals and objectives.
- Special safety considerations: Maintain firefighter and public safety at all times.

3.2.2. **FMU Guidance**

This FMU encompasses 265,475 acres of SHF land in Jackson, Union, Alexander, Pulaski, Williamson, Saline, Gallatin, Hardin, Pope, Johnson, and Massac Counties. This unit covers all of the Hidden Springs Ranger District and large portions of the Mississippi Bluffs Ranger District. The preferred suppression response is control. Indirect suppression methods are acceptable under some circumstances. Other suppression responses may be desirable at times and in places because of firefighter safety concerns, ease or speed of control of the fire, or other reasons.

- **Desired Conditions** Please see pages 52-91 of the LRMP

Guidelines Response to a wildland fire—any non-structure-related fire in the wildland—is based on the ecological, social and legal consequences of the fire. The appropriate response is dictated by the circumstances under which a fire occurs and the likely consequences on firefighter and public safety and welfare, natural and cultural resources, and any other values to be protected. Fire is an essential natural process that should be incorporated into all levels of planning and activities at the landscape scale and across national forest boundaries. As nearly as possible, wildland fire should be allowed to play its role in the creation and maintenance of disturbance-dependent ecosystems. Accordingly, fire should be used as a management tool, including planned ignitions and wildland-fire use.

Wildfires—unwanted wildland fires—should be suppressed as necessary utilizing the full range of suppression strategies applicable and appropriate to the management area and the conditions in which the fire is burning, to protect lives and property, national forest lands and other ownerships.

AMR (Planned and Unplanned)

Prescribed fire and wildland-fire use may be employed to accomplish oak and other species regeneration, hazardous fuels reduction, wildlife habitat management, ecological restoration, maintenance of fire-dependent plant communities, timber-stand improvement and other management objectives. Preference should be given to landscape-scale burns. When possible, natural or existing features, such as streams, roads and trails, should be used as firebreaks.

- **Standards** Ensuring the safety of fire-management personnel and the public is the primary objective of all fire-management planning and operations. A fire-management plan shall be maintained that provides direction for wildfire prevention, detection and suppression, fire use, and hazardous fuels reduction. The plan shall be updated annually.
 - All management-ignited prescribed fires shall be carried out in accordance with the provisions of an approved burning plan. Smoke-management planning must be used to control the effects of smoke emissions and meet air-quality standards. During prescribed fires, consideration shall be given to smoke-sensitive areas downwind of the burn, including Indiana bat and gray bat hibernacula.
 - All wildland fire use shall be managed in accordance with provisions of the wildland fire implementation plan. Smoke management will be incorporated into wildland fire implementation plans and wildland fire situation analyses in order to minimize adverse effects on smoke-sensitive downwind areas, including Indiana bat and gray bat hibernacula.
 - Burns within 0.25 mile of any Indiana bat or gray bat hibernacula shall be conducted under conditions that reduce or eliminate the dispersal of smoke into the hibernacula.
 - For the protection of Indiana bat or gray bat maternity roosts and foraging habitats, no prescribed burns shall be conducted in upland forests between May 1 and September 1 and in bottomland forests between April 1 and September 1.
 - For the protection of Indiana bat male roosting-habitat within 4 kilometers (~2.5 miles) around any known hibernacula, no more than 20 percent of the habitat in this zone shall be burned (blackened) in each year, and within 4-8 kilometers (~2.5 to 5 miles) around any known hibernacula, no more than 50 percent shall be burned (blackened) in each year.
 - For the protection of the nests and nestlings of migratory birds, growing-season burns should be done as early or as late in the season as possible, preferably before April 15 and after August 1.
 - Natural and activity fuels are managed for wildland-urban interface-community and resource protection, and other resource objectives. Agreements with cooperating agencies for fuels-management activities are encouraged. Fuels-management activities may include a range of available treatment methods, including prescribed burning, hand and mechanical treatments, and others in accordance with management prescriptions.
 - Agreements with cooperating fire-fighting agencies for fire-detection and suppression on national forest lands must define suppression action in accordance with established resource management objectives and fire plans. All contracts for work must contain clauses or direction that provide for adequate fire-prevention measures on or near the work site.

3.2.3. FMU Characteristics

3.2.3.1. Safety

Under no circumstances will actions be taken that needlessly jeopardize life or property. In all fire management actions, providing for firefighter and public safety is the overriding priority. Protecting property, cultural, or natural resources, or achieving any other objective is always secondary to this. All personnel are responsible for following the 10 Standard Firefighting Orders, and for recognizing and mitigating risks associated with the 18 Situations that Shout Watch-Out.

3.2.3.2. Physical

Geologically, most of the area lies among the Shawnee Hills Section of the Interior Low Plateau Physiographic Province. Small portions at the western and southern margins are in the Ozark Plateau Section of the Ozark Plateau Province and the East Gulf Coastal Plain Section of the Coastal Plain Province.

3.2.3.3. Biological

Unacceptable impacts to biological, cultural, or other resources: Manage fires in a way such as to ensure that the fire or any management actions do not adversely affect such resources. It is advisable to consult specialists early in the project planning process and in the development of the Prescribed Fire Burn Plan (RxBP) or WFDSS.

Management actions should not adversely affect listed, eligible, or potentially eligible sites for the National Register of Historic Places. Where it is necessary to construct control lines, prefer the least impacting technique. Dozer or plow lines will not be built within known cultural resource sites except to protect life and property or when such action is necessary to protect the site. Under such circumstances, the Forest Archeologist will be consulted as soon as possible to design mitigation measures or to provide other guidance.

Management actions will not adversely affect federally or state-listed Threatened or Endangered Species. The District Wildlife Biologist should be consulted for proper mitigation measures to avoid negative impacts to biological resources.

On and Off-site impacts from smoke: Fires will be managed so that negative effects of smoke both within the unit and in the surrounding area are minimized. Examples of such negative effects include health impairment of patients at area hospitals, interference with motor traffic on highways, exceeding NAAQS, etc.

Minimum Impact Techniques: The Wilderness Act mandates that such areas be managed in a primitive state. Further direction in the FSM 2320 and in the Shawnee National Forest Land and Resource Management Plan give more specific guidance. To keep the area appearing natural and untrammelled by humans as much as possible, personnel are to employ the Minimum Impact Management Techniques. This involves using strategies and tactics that result in the least impact to the land. Such strategies may involve increased monitoring versus aggressive suppression, locating camps and facilities outside of wilderness. Minimum impact tactics could include using water, foam, or fireline explosives versus line dug to mineral soil, hand line versus dozer or plow line, burning out from existing control lines versus direct fireline construction, increased cold trailing versus spading the ground, burning or blasting trees down versus felling, using pack strings for supplying personnel versus helicopter longline missions, etc. In general, this means using the “minimum tool” concept; or, using the least impacting tool to achieve

mission objectives. In some instances the minimum tool may indicate that heavy equipment or aerial resources are employed. Forest Supervisor approval is required for using motorized equipment such as chainsaws, leaf blowers, or helicopters in the wilderness. Regional Forester Approval is required prior to using dozers or other heavy equipment. The Incident Commander has the delegated authority to initially determine the appropriate minimum impact tools and tactics. Whatever tactics are used, every effort will be made to restore and rehabilitate the area to its previous state once the emergency has concluded. This may include scattering, hiding, or burning cut faces of logs, refilling fireline trenches, scattering wood and brush over firelines, etc.

3.2.3.4. Resources

Several federally and state-listed threatened and endangered species are known to occur in the area. Indiana bats and other bats use the area for summertime foraging. To avoid having adverse effects on Indiana bats, standard and guidelines in the Forest Plan have burning constraints listed for prescribed fire operations.

Several creeks run through parts of the FMU. These aquatic resources are important for recreation (fishing, boating, etc), scenery, as wildlife habitat. There are likely federally-listed or state-listed threatened or endangered aquatic species in some areas.

Archeological evidence shows that the area has been inhabited since prehistoric times. Trappers and explorers passed this way in the first few centuries after European establishment on the continent, but it was not until the 1800's that the area saw significant settlement. Much of the forested land was cleared for agriculture, grazing, lumber, or other uses. The Shawnee National Forest was created in 1939, largely out of tracts of degraded farmland. Evidence still exists of old farmsteads, wells, fences, roads, and the like.

3.2.4. FMU Fire Environment

Parts of four ecological divisions of the Eastern Broadleaf Forest (Continental) Province are found in this FMU: The Shawnee Hills Natural Division, the Coastal Plain, the Wabash Border, and the Ozark Hills. Each of these divisions has sections and subsections that are ecologically different. The SHF contains mostly oak-hickory dominated forests, with significant tracts of non-native pine and some open lands. Much of the existing vegetation composition and structure is due to past land use practices when the land was in private ownership. Though the majority of the Shawnee National Forest is described as dominated by oaks and hickories, there is a significant shift towards less fire adapted tree species. This is thought to be due to the exclusion of fire from the landscape over the last 100 years.

3.2.4.1. Fire Behavior

Fire has played a significant role in the development and maintenance of many ecosystems in the Central Hardwoods. Pollen studies, tree-ring records, General Land Office survey notes, and early explorer's and settler's accounts all suggest that the landscape of the area experienced fire much more often than is the case now. Native Americans are known to have used fire to manipulate habitat, manage fuels, drive game, maintain clear sightlines, and many other things. Fire scar analysis suggests that fires occurred much more frequent immediately after the area was first settled. Studies from southern Indiana give an average fire return interval of 23 years from 1650-1820. Parker and Ruffner (2004) refer to a study that found the Missouri Ozarks to have burned even more frequently or approximately every 11.96 years. Early pioneers may have adopted native practices regarding burning. During the 19th century, the area saw significant disturbance related to land clearing, row cropping, timber

harvest, grazing, and fire. The Indiana study shows the average fire return interval decreasing to 5 years during this time, while fire visited the Missouri Ozarks every 3.64 years. After this period, fire occurrence decreased dramatically. Forest Service records show an average of 29 fires per year from 1981-1995, and 26 per year from 1981-2004. However, it is thought that many fires on Shawnee National Forest lands go unreported. Volunteer fire departments that cover the area may receive notice of fires and/or suppress them without informing Shawnee officials.

Most of the unit can be described as National Fire Danger Rating System Fuel Model E (hardwood leaf litter in autumn). In late spring, summer, and early fall it is modeled as NFDRS Fuel Model R. Due to limited vegetation manipulation projects over the last several years, there are no widespread or heavy accumulations of activity fuels. Occasional weather events can produce dead and damaged trees. There are currently no such areas of any large extent known, though tornados and ice storms have caused damage to localized areas. Recent aerial detection flights have indicated no widespread occurrence of insect or disease damage in the unit, though this is subject to change. Fuels in the area are therefore similar to fuels in the Forest as a whole and are chiefly subject to the same seasonal influences, both morphological and weather-induced. One notable departure is the pine stands. Often planted for erosion control in the early 20th century, these stands have become very dense and decadent with a higher proportion of dead fuel. Much of this fuel consists of dead standing trees in the canopy and midstory, dead branches, and heavy litter accumulation, and small pockets of open land encroachment by eastern red cedar encroachment. These fuels can act as ladder fuels under the right conditions, allowing surface fires to climb into the canopies of trees. This can represent a significant control problem due to high intensities, rapid rates of spread, and profuse spotting. Since these pine stands make up only a minority of vegetation cover on the SHF, they are not modeled for daily fire danger ratings in NFDRS. They can be modeled for fire behavior using Fuel Model 9, (hard pine litter/ hardwood leaf litter in autumn).

Dead fuel moisture in the hardwood leaf litter and brush communities is a significant factor in fire spread and intensity. A low relative live fuel moisture condition combined with a continuous fuel bed with available fine fuels sets the stage for large fire growth.

Fuel loadings have increased across the FMU as a result of past fire suppression and a reduction in prescribed burning.

The bottomlands and shady coves and streams have likely not changed significantly in their fire regime (condition class 1). Open lands are naturally reseeding and being converted to forest, mimicking the natural gap-phase dynamics of the central hardwoods. Other fuels in the unit, particularly upland oak-hickory, are considered to be in Condition Class 3. Historically, frequent low-moderate intensity fires are thought to have kept these upland forests at a “fire climax” state, with fire-tolerant species dominating the canopy and midstory. Fire-adapted grasses and forbs dominated the understory. With the near total cessation of fire activity in the 20th century, these forests have seen dramatic changes in composition and structure. The midstory and understory are becoming dominated by shade-tolerant tree, shrub, and forb species. The increased shade changes the microclimate of the understory and makes it harder for fires to propagate, encouraging increased recruitment of shade-tolerant species. These forests have missed several fire return cycles, are outside the range of natural variability, and are in danger of losing critical ecosystem functions. As mentioned above, some pine stands have become overly dense, needing fire to kill individual stems (thin out the

stand) and naturally prune the lower branches. These stands, not being natural, are hard to place in a “natural” fire regime, but are most likely in condition class 2 or 3.

The dominant topographic features in the unit are the highlands of the Shawnee Hills, the steep canyons and valleys splitting the hills, and the broad river floodplains of the Wabash and Cache Rivers, and the many smaller creeks. These can serve as natural control lines, but also may be barriers to access for personnel. A network of roads and existing trails and can serve as pre-constructed control lines as well. Any control problems would likely come about as a combination of limited access, slow response times, and very dry fuels.

Though natural ignitions occur very rarely, they are nonetheless thought to be an important element of the pre-settlement fire regime. They (and anthropogenic burns) most likely occurred in late summer or early fall, when conditions would have been dry enough for an ignition to last until adjacent fine fuels dried sufficiently to carry fire. This time frame is also when the present-day SHF sees some of its highest visitor use rates.

Fire season roughly corresponds to the time between snowmelt and “green up” in the spring. A second season begins after fine fuels have cured and leaves have withered and fallen, but before winter temperatures and precipitation limit fire activity in the winter. Averages of historical fire activity put these dates as:

Spring Season:	February 12 – May 5
Fall Season:	October 13 – December 10

3.2.4.2. Weather

The year starts out cold and wet. Occasional warm, dry days in January and February allow exposed fine fuels such as dormant warm season grass to carry fire on these days. Days and nights gradually warm into February and March, beginning the spring fire season. Though there may be periodic rain showers, fire danger gradually increases since this is usually the windiest and driest season. New growth appears at this time and the first leaves bud on trees. This growth is not enough to shade the forest floor or serve as a large “sink” for heat/energy. Mid-April typically sees the most fire starts. April and early May usually bring the first thunderstorms to the area. These storms can produce significant moisture, but also high winds and lightning. By mid-May new growth and spring precipitation have ended the fire season. Hot days and high humidity in June, July, and August usually preclude any fire ignition or spread. Rain showers diminish in August and September, and the region can see occasional short-term droughts in this time. Drier conditions and cooler nights signal some plants to produce seed and begin to enter dormancy. In drier years grass, pine litter, and leaves may become available to burn at this time. By mid-October fine fuels are totally cured and leaf fall is well underway. The addition of these fine fuels and the opening of the forest canopy start the fall fire season. Occasional showers associated with frontal passages every few days serve to keep fire danger moderated in many years. Lingering “Indian summer” weather in some years can lead to an active fall fire season. As days shorten and nights become cooler through the autumn fire danger decreases. Fire season usually ends in mid-December as cold days and winter precipitation keep fuel temperatures down and do not allow fuels to dry to the ignition point.

Below normal precipitation conditions are the primary contributor to fire events, with low 10, 100, 1000-hour dead fuel moistures. Strong winds associated with frontal passages and thunder cell activity have historically influenced fire large growth and spread events.

3.2.5. **FMU Snap Shot**

- FMU Number: FMU 2 – Mississippi and Big Muddy River Bottomlands
- Radio Frequency: RX-168.675, TX-170.500
- General Risk Category: Moderate
- Fire Behavior Indicator: Moderate
- NFDRS Weather Station: Bean Ridge-119701 & Dixon Springs-119501
- Nearest Weather Station: Paducah Kentucky
- Acres/Agency: 19,145 acres of Shawnee National Forest land

Predominant Vegetation Types: Much of the unit can be described as National Fire Danger Rating System Fuel Model L (perennial grass) and Fire Behavior Fuel Model 3. The floods of 1993, 1994, 1995, and 1996 killed most of the timber in parts of this FMU. The elimination of the canopy allowed the forest floor to become thickly vegetated with grass and shrubs, creating large amounts of continuous 1 and 10 hour fuels. The dead standing timber creates a significant snag hazard for firefighters and contributes to accumulations of 100 and 1000 hour fuels. Occasional weather events such as tornados and ice storms can produce dead and damaged trees in localized areas. Recent aerial detection flights have indicated no widespread occurrence of insect or disease damage in the unit, though this is subject to change.

Dead fuel moisture in the grass and brush communities is a significant factor in fire spread and intensity. A low relative live fuel moisture condition combined with a continuous fuel bed with available fine fuels sets the stage for large fire growth.

Fuel loadings have increased across the FMU as a result of flooding, past fire suppression and a reduction in prescribed burning.

-
- Unit: This unit is found on the Mississippi Bluffs Ranger District.
- IA assets assigned to this FMU: 1-Type 6 4x4 Engine and 4 person hand-crew
- Duty Officer: Chris Peterson
- IA Dispatch Office: Illinois Interagency Dispatch Center
- Communities adjacent or within FMU: There is private property adjacent to and interspersed all throughout the FMU. Considerations of damage to private property are paramount in selecting fire management strategies. However, agricultural ground abuts much Forest land, minimizing risk from fire burning from FS lands in those areas.
- LMP Options available for AMR: Unplanned wildland fire can be managed to achieve LMRP objectives.
- Special safety considerations: Power-lines, gas transmission lines.

3.2.6. **FMU Guidance**

Although the area is classified as unsuitable for timber production, commercial or non-commercial timber harvest may be used to accomplish objectives such as the restoration of natural ecosystems or the provision of habitat for wildlife. Management is in accordance with the *Middle Mississippi Partnership Coordination Plan*, with recreational emphasis on the provision of non-motorized recreational opportunities. Management activities that may be seen include prescribed burning, temporary-road construction, trail and recreational area maintenance, openings maintenance, and levee and dam construction and maintenance.

Recreational opportunities are provided within a roaded-natural setting. Developed facilities are provided to protect the resource, provide for visitor safety, or to offer interpretation. Trails are provided for resource-protection or visitor-safety. Mineral activities are generally compatible, but special stipulations apply. Management activities that may be seen include prescribed burning, timber-stand improvement, reforestation, temporary road construction and maintenance, moist-soil areas/openings maintenance, levee, dam and ditch construction and maintenance, and controlled flooding. (Pages 73 & 81)

Desired Conditions These areas have soil, vegetative and hydrologic conditions unique to the Forest. Wetland habitat and hydrologic restoration is the management emphasis. Hydrologic restoration is accomplished where possible to simulate natural-wetland functions. Some areas provide permanent-water conditions comparable to historical swamps and oxbows. Overall, the floodplains are a landscape of bottomland hardwoods with interspersed herbaceous wetlands, some of which are managed to promote annual-wetland habitat and vegetation. In areas ponded and wet for long periods, cypress may be selected for reforestation and management. There is some diversity of age-classes as a result of natural succession.

Some areas may be managed as openlands to support wildlife species and diversity. Native reptiles, amphibians, waterfowl, shorebirds, wading birds and water birds are common, as are aquatic mammals such as beaver, muskrat, mink and river otter. Forest habitat is managed generally for shade-intolerant tree species and bottomland hardwoods, including pin, swamp white, overcup and cherrybark oak, and green ash, pecan and hickory. A system of primarily public roads and broad levee-tops provides access. Non-motorized recreational use is emphasized. Mineral activity is generally compatible, but special stipulations apply.

The area contains stands of pin oak and other bottomland hardwood trees and associated understory. A variety of mast-producing oak species make up 60 percent or more of the forest. Stands vary from seedling to mature sizes, with about the same acreage in each age-class. A system of levees divides the area into compartments that are annually flooded to provide wetland habitat. The land supports high populations of ducks and other waterfowl as well as other game and non-game species. A variety of recreational opportunities is provided in a primarily non-motorized setting, including hunting, hiking and wildlife-viewing. Roads provide non-motorized access for forest management and limited recreational use. Local roads are generally closed year-round.(Pages 73 &81)

- **Guidelines** Response to a wildland fire—any non-structure-related fire in the wildland—is based on the ecological, social and legal consequences of the fire. The appropriate response is dictated by the circumstances under which a fire occurs and the likely consequences on firefighter and public safety and welfare, natural and cultural resources, and any other values to be protected. Fire is an essential natural process that should be incorporated into all levels of planning and activities at the landscape scale and across national forest boundaries. As nearly as possible, wildland fire should be allowed to play its role in the creation and maintenance of disturbance-dependent ecosystems. Accordingly, fire should be used as a management tool, including planned ignitions and wildland-fire use.

Wildfires—unwanted wildland fires—should be suppressed as necessary utilizing the full range of suppression strategies applicable and appropriate to the management area and the

conditions in which the fire is burning, to protect lives and property, national forest lands and other ownerships.

AMR (Planned and Unplanned)

Prescribed fire and wildland-fire use may be employed to accomplish oak and other species regeneration, hazardous fuels reduction, wildlife habitat management, ecological restoration, maintenance of fire-dependent plant communities, timber-stand improvement and other management objectives. Preference should be given to landscape-scale burns. When possible, natural or existing features, such as streams, roads and trails, should be used as firebreaks.

Standards . Ensuring the safety of fire-management personnel and the public is the primary objective of all fire-management planning and operations. A fire-management plan shall be maintained that provides direction for wildfire prevention, detection and suppression, fire use, and hazardous fuels reduction. The plan shall be updated annually. No burning shall be conducted in forested areas of Oakwood Bottoms between March 1 and April 1. No more than 30 percent of the Big Muddy River bottomlands east of the Big Muddy River levee shall be burned (blackened) in each year. (page 47/48)

- FMU Characteristics

3.2.6.1. Safety

Under no circumstances will actions be taken that needlessly jeopardize life or property. In all fire management actions, providing for firefighter and public safety is the overriding priority. Protecting property, cultural, or natural resources, or achieving any other objective is always secondary to this. All personnel are responsible for following the 10 Standard Firefighting Orders, and for recognizing and mitigating risks associated with the 18 Situations that Shout Watch-Out.

3.2.6.2. Physical

Geologically, the unit is in the Ozark Plateau Section of the Ozark Plateau Province and is underlain by alluvial slack-water sediments deposited in a broad floodplain by glacial outwash at the end of the last ice age.

The unit includes all of the Inahgeh properties, all of Oakwood Bottoms including the Greentree Reservoir south to Winter's Pond, and east to the point east of the Big Muddy River where the bottomlands timber type changes. It also includes all the land in Union and Alexander Counties between Highway 146 in the north and the town of Gale on the south and from the western Forest boundary to the point east of the Clear Creek Ditch where the bottomland timber type changes.

3.2.6.3. Biological

Unacceptable impacts to biological, cultural, or other resources. Manage fires in a way such as to ensure that the fire or any management actions do not adversely affect such resources, especially water quality and critical riparian habitat. It is advisable to consult specialists early in the project planning process and in the development of the Prescribed Fire Burn Plan (RxBP) or WFDSS.

Management actions should not adversely affect listed, eligible, or potentially eligible sites for the National Register of Historic Places. Where it is necessary to construct control lines,

prefer the least impacting technique. Dozer or plow lines will not be built within known cultural resource sites except to protect life and property or when such action is necessary to protect the site. Under such circumstances, the Forest Archeologist will be consulted as soon as possible to design mitigation measures or to provide other guidance.

Management actions will not adversely affect federally or state-listed Threatened or Endangered Species. The District Wildlife Biologist should be consulted for proper mitigation measures to avoid negative impacts to biological resources.

On and Off-site impacts from smoke. Fires will be managed so that negative effects of smoke both within the unit and in the surrounding area are minimized. Examples of such negative effects include health impairment of patients at area hospitals, interference with motor traffic on highways, exceeding NAAQS, etc.

Minimum Impact Techniques. There is no designated wilderness within this FMU. The Big Muddy River is, however, under study to be considered a wild and scenic river. The LRMP mandates that this area be managed in such a state as to not affect its potential for inclusion in the Wilderness Preservation System. Further direction in the FSM 2320 and in the Shawnee National Forest Land and Resource Management Plan give more specific guidance. To keep the area appearing natural and untrammelled by humans as much as possible, personnel are encouraged to employ the Minimum Impact Management Techniques. This involves using strategies and tactics that result in the least impact to the land. Such strategies may involve increased monitoring versus aggressive suppression. Minimum impact tactics could include building hand line versus dozer or plow line, burning out from existing control lines versus direct fireline construction, increased cold trailing versus spading the ground, burning or blasting trees down versus felling, etc. In general, this means using the “minimum tool” concept; or, using the least impacting tool to achieve mission objectives. In some instances the minimum tool may indicate that heavy equipment or aerial resources are employed. The Incident Commander has the delegated authority to initially determine the appropriate minimum impact tools and tactics. Whatever tactics are used, every effort will be made to restore and rehabilitate the area to its previous state once the emergency has concluded. This may include scattering, hiding, or burning cut faces of logs, refilling fireline trenches, scattering wood and brush over firelines, etc.

3.2.6.4. Resources

Several creeks and rivers run through parts of the FMU. These aquatic resources are important for recreation (fishing, boating, etc), scenery, as wildlife habitat. Several federally and state-listed threatened and endangered species and management indicator species are known to occur in the area. Indiana bats and other bats use the area. To avoid having adverse effects on Indiana bats, standard and guidelines in the Forest Plan have burning constraints listed for prescribed fire operations. Wetlands are thought to be valuable habitat for 40% of the State’s Threatened and Endangered species. Game species (especially waterfowl) are known to frequent these wetlands, making this area one of the most popular on the SHF.

3.2.7. FMU Fire Environment

Part of the Southern Section of the Lower Mississippi River Bottomlands ecological division of the Eastern Broadleaf Forest (Continental) Province, this unit is composed of species of both northern and southern affinities and was dominated by bottomland forests, marshes, and wet prairies. Much of the existing vegetation composition and structure is due to past land use practices when the land was in private ownership. Much

of the former wetlands has been drained, plowed, and developed, making it one of the scarcest ecosystems left in the United States. Evidence still exists of old farmsteads, wells, fences, roads, and the like.

3.2.7.1. Fire Behavior

Despite containing only 7% of SHF lands, this FMU had 11 of the 17 fires on the Mississippi Bluffs Ranger District in 2004. It has also seen the most prescribed fire activity in recent years, with prescribed fires occurring within the FMU annually since 1999. Other fire history is similar than that of FMU 1.

Much of the unit can be described as National Fire Danger Rating System Fuel Model L (perennial grass) and Fire Behavior Fuel Model 3. The floods of 1993, 1994, 1995, and 1996 killed most of the timber in parts of this FMU. The elimination of the canopy allowed the forest floor to become thickly vegetated with grass and shrubs, creating large amounts of continuous 1 and 10 hour fuels. The dead standing timber creates a significant snag hazard for firefighters and contributes to accumulations of 100 and 1000 hour fuels. Occasional weather events such as tornados and ice storms can produce dead and damaged trees in localized areas. Recent aerial detection flights have indicated no widespread occurrence of insect or disease damage in the unit, though this is subject to change.

Dead fuel moisture in the grass and brush communities is a significant factor in fire spread and intensity. A low relative live fuel moisture condition combined with a continuous fuel bed with available fine fuels sets the stage for large fire growth.

Fuel loadings have increased across the FMU as a result of flooding, past fire suppression and a reduction in prescribed burning.

The bottomlands and shady coves and streams have likely not changed significantly in their fire regime (condition class 1), since fire was a rare visitor. However, many of these lands had been cleared, drained, or undergone other drastic land-use changes in the past 200 years. Frequent fire kept wet prairies and open lands from being reseeded by tree species. Composition of bottomland forests follows complex successional pathways, dependent on flood regime, erosion and deposition of alluvial sediments, etc. It is thought that parts of the FMU are in all condition classes.

The dominant topographic features in the unit are the broad river floodplains of the Mississippi and Big Muddy Rivers, seasonally flooded areas in Oakwood Bottoms and Larue swamp, and the many smaller creeks. These can serve as natural control lines, but also may be barriers to access for personnel. A network of roads and levees can serve as pre-constructed control lines as well. Any control problems would likely come about as a combination of limited access, slow response times, and very dry fuels.

Though natural ignitions occur very rarely, they are nonetheless thought to be an important element of the pre-settlement fire regime (Parker and Ruffner, 2004). They (and anthropogenic burns) most likely occurred in late summer or early fall, when conditions would have been dry enough for an ignition to last until adjacent fine fuels dried sufficiently to carry fire. This time frame is also when the present-day SHF sees some of its highest visitor use rates.

Fire season officially corresponds to the time between snowmelt and “green up” in the spring. A second season begins after fine fuels have cured and leaves have withered and fallen, but

before winter temperatures and precipitation limit fire activity in the winter. Averages of historical fire activity put these dates as:

Spring Season:	February 12 – May 5
Fall Season:	October 13 – December 10

Exposed, grassy fuels dominate portions of this FMU, and dry much quicker than forested areas. This allows for fires throughout the year. There were two fires in January of 2004 in this FMU.

3.2.7.2. Weather

Weather patterns are similar to those in FMU 1.

Some flooding occurs annually, but surface water volume deficiencies occur periodically. Once every 5 years the area can expect to receive rainfall 15% below average, while once every 50 years the area can expect to see water volumes 33% below average.

Below normal precipitation conditions are the primary contributor to fire events, with low 10, 100, 1000-hour dead fuel moistures. Strong winds associated with frontal passages and thunder cell activity have historically influenced fire large growth and spread events.